



## SEQUENCE LISTING

<110> RheinBiotech Limited Liability Company for New Biotechnological Processes and Products  
Romano, Ivano  
Gellissen, Gerd  
DeVergilio, Claudio

<120> HEAT-INDUCIBLE PROMOTER

<130> 029474-5006

<140> US 09/927,811  
<141> 2001-08-09

<150> PCT/EP00/01144  
<151> 2000-02-11

<160> 33

<170> PatentIn version 3.2

<210> 1  
<211> 792  
<212> DNA  
<213> Hansenula polymorpha

<400> 1  
cttaaataacc acaataggaa aattatcaat aaagcttttc ggatttcatt acgttatatc 60  
gcaaaaaaaaat agtcgagctt tctgaaccgt tcgttaataa aaaaatagtt ttttcagatt 120  
tctatgtgag gcagtcacga tagaattcca tcgaactcgt cagcgccaaa tgtgaatgcg 180  
gccttcaaaa gctttgtcga atttggatg ggaatccatg aatcgaagat gtcaaaatgg 240  
gggatcacaa aagtacactc acgaggaaaa tcaaaacctt ctcgtacctt taacacatac 300  
ggaaatgatc gatcgatttg agaagattcc tcaatgatt tcgtcatata tagtatctg 360  
agtttattat ggaccgattc gtaataacat catatacatc gcgccttgc cctgtcccag 420  
agatttcgat gaaaaaagcg aattttattc taatatttga agcatgccaa acatggggca 480  
gttgatttgt gtgagggtaa aatatcatga attgcaccca tcaaatgcag caagatattg 540  
accaatccta taatagaaaa cagacttacc acaaataaatatgat tgtgatgacg atattatgaa 600  
tctccagatg aaaggctcga aagctatgaa gcctcttgc acttttcatg gtgagataat 660  
attttcgaaa ttccacgaa cttctaaaac gcaattatttgc aatataaagg aaaaataata 720  
tttccatata gcaagcaaat caagctgcac tcctcatcct taaaactaat aaatcttacc 780  
catttgatac ca 792

<210> 2

```

<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Consensus sequence for a heat shock element

<220>
<221> misc_feature
<222> (1)..(15)
<223> n may be a,c,t, or g

<400> 2
ngaannnnn ngaan                                         15

<210> 3
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Special embodiment of the heat shock element

<220>
<221> misc_feature
<222> (1)..(15)
<223> n is a, c, t,or g; b is g, c, or t; w is a or t; and m is c or a

<400> 3
ngaannbwmn ngaan                                         15

<210> 4
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid sequence of a heat shock element

<400> 4
tgaagcctct tgaaa                                         15

<210> 5
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid sequence of a heat shock element

<400> 5
tgaatataaa ggaaa                                         15

<210> 6
<211> 1903
<212> DNA
<213> Hansenula polymorpha

```

<400> 6  
 atggtaaaat gtaatgttat agtggttca aatagaatcc cagtcactat taagaagact 60  
 gaagatgatg aaaatggaaa atcaagatac gactatacaa tgtcatcagg cgattagtg 120  
 acggcattac aaggctcaa aaatccattt cgatggttt gatggctgg gatgtctgtt 180  
 gatagcgaac agggacgaca aactgtcgag cgggatttga aggaaaagtt caattgttat 240  
 ccgatatggt taagtgcga aattgcagac ttacattata acggcttag caattctata 300  
 ctggccat tggccacta tcacccaggg gagatgaatt ttgatgaaat tgctggcc 360  
 gcttatttgg aagcaaataa actgtttgc caaacgatct taaaggagat aaaagacggg 420  
 gacgttatct gggtacatga ttatcatctc atgttgc ttcaactgct aagagaccaa 480  
 cttaatagta agggctacc gaatgtcaaa attggcttt tccttcatac tcctttcct 540  
 tcaagcggaaa tatacaggat acttcctgta agggaaagaaa ttctcgaagg agtgcttagt 600  
 tgtgattga taggttcca cacctatgat tatgtccgtc actttcttag ttcgggtgaa 660  
 agaatattga aattgcgaac gagcccacaa ggtgttgtct ataatgatag acaggtgact 720  
 gtaagtgcattt atccgattgg cattgacgtt gacaaattct tgaatggtct taagactgat 780  
 gaggtcaaaa gcaggataaa acagctggaa accagatttgc gtaaagattt gaaacttatt 840  
 attgggtgg acaggctgga ttacatcaaa ggtgtacctc aaaaactcca cgcgttgaa 900  
 atttcttgg agagacaccc tgagtggatt ggaaaagttt tttgataca ggtggctgtc 960  
 ccctcacgag gggacgttga agaatatcaa tcttgaggg cagctgtaaa tgagcttagt 1020  
 ggaagaatca atggtagatt tggtaccgtc gaatttgc ttccatctt ctttcataaa 1080  
 agcgtgaact tccaagagct gatatctgtc tacgctgcta gtgtgtttt tggatgtca 1140  
 tcgacacggg acggaatgaa tttggtcagt tatgaataca ttgcttgtca acaagatcga 1200  
 aaggatctc tagtactaag tgaatttgcg ggagctgctc agtcattttt tggcgctctc 1260  
 gtagtgaatc catgaaatac agaagaactc agtgaagcta ttacgagg ctgtatcatg 1320  
 agtgaagaga aaaggagggg caatttcag aagatgttca agtacatttga gaaatataact 1380  
 gcaagtttattt gggagagaaa ctttgaaa gaattgacga gagtgtgatt actgtggttt 1440  
 gcaggtaat ttgaaatgtt cacttgcact tgaagaattt tatattatatacatgttata 1500  
 catcaatagg ataaaaatttta agtagacaaa gttatcattt tggggctg taaaatttga 1560  
 acgataacaa tatatttgac aaaattaatt tgatctaatt gagctggagg gcgtaatata 1620  
 tttggttcc tgaatcatct tggatgtcac aatatggggc agcttcttc gcagccgatc 1680

acagagaaaac acatcacact tgtccaacat gatcacatat cgcatcaat cggggaaatg 1740  
 caaggataca ggttgcaccat ggaagacgct ttctgtgatt tgaacgaaag aatattcg 1800  
 acggaagagg gacttgacat cagaaaacaa gacgagaata cagagggtga tctggagtct 1860  
 cttcaaatta acatttatgg tgtcttgac ggacatggcg gtt 1903  
  
 <210> 7  
 <211> 475  
 <212> PRT  
 <213> Hansenula polymorpha  
  
 <400> 7  
  
 Met Val Lys Gly Asn Val Ile Val Val Ser Asn Arg Ile Pro Val Thr  
 1 5 10 15  
  
 Ile Lys Lys Thr Glu Asp Asp Glu Asn Gly Lys Ser Arg Tyr Asp Tyr  
 20 25 30  
  
 Thr Met Ser Ser Gly Gly Leu Val Thr Ala Leu Gln Gly Leu Lys Asn  
 35 40 45  
  
 Pro Phe Arg Trp Phe Gly Trp Pro Gly Met Ser Val Asp Ser Glu Gln  
 50 55 60  
  
 Gly Arg Gln Thr Val Glu Arg Asp Leu Lys Glu Lys Phe Asn Cys Tyr  
 65 70 75 80  
  
 Pro Ile Trp Leu Ser Asp Glu Ile Ala Asp Leu His Tyr Asn Gly Phe  
 85 90 95  
  
 Ser Asn Ser Ile Leu Trp Pro Leu Phe His Tyr His Pro Gly Glu Met  
 100 105 110  
  
 Asn Phe Asp Glu Ile Ala Trp Ala Ala Tyr Leu Glu Ala Asn Lys Leu  
 115 120 125  
  
 Phe Cys Gln Thr Ile Leu Lys Glu Ile Lys Asp Gly Asp Val Ile Trp  
 130 135 140  
  
 Val His Asp Tyr His Leu Met Leu Leu Pro Ser Leu Leu Arg Asp Gln  
 145 150 155 160  
  
 Leu Asn Ser Lys Gly Leu Pro Asn Val Lys Ile Gly Phe Phe Leu His  
 165 170 175  
  
 Thr Pro Phe Pro Ser Ser Glu Ile Tyr Arg Ile Leu Pro Val Arg Lys  
 180 185 190  
  
 Glu Ile Leu Glu Gly Val Leu Ser Cys Asp Leu Ile Gly Phe His Thr  
 195 200 205  
  
 Tyr Asp Tyr Val Arg His Phe Leu Ser Ser Val Glu Arg Ile Leu Lys  
 210 215 220

Leu Arg Thr Ser Pro Gln Gly Val Val Tyr Asn Asp Arg Gln Val Thr  
 225                    230                    235                    240  
  
 Val Ser Ala Tyr Pro Ile Gly Ile Asp Val Asp Lys Phe Leu Asn Gly  
 245                    250                    255  
  
 Leu Lys Thr Asp Glu Val Lys Ser Arg Ile Lys Gln Leu Glu Thr Arg  
 260                    265                    270  
  
 Phe Gly Lys Asp Cys Lys Leu Ile Ile Gly Val Asp Arg Leu Asp Tyr  
 275                    280                    285  
  
 Ile Lys Gly Val Pro Gln Lys Leu His Ala Phe Glu Ile Phe Leu Glu  
 290                    295                    300  
  
 Arg His Pro Glu Trp Ile Gly Lys Val Val Leu Ile Gln Val Ala Val  
 305                    310                    315                    320  
  
 Pro Ser Arg Gly Asp Val Glu Glu Tyr Gln Ser Leu Arg Ala Ala Val  
 325                    330                    335  
  
 Asn Glu Leu Val Gly Arg Ile Asn Gly Arg Phe Gly Thr Val Glu Phe  
 340                    345                    350  
  
 Val Pro Ile His Phe Leu His Lys Ser Val Asn Phe Gln Glu Leu Ile  
 355                    360                    365  
  
 Ser Val Tyr Ala Ala Ser Asp Val Cys Val Val Ser Ser Thr Arg Asp  
 370                    375                    380  
  
 Gly Met Asn Leu Val Ser Tyr Glu Tyr Ile Ala Cys Gln Gln Asp Arg  
 385                    390                    395                    400  
  
 Lys Gly Ser Leu Val Leu Ser Glu Phe Ala Gly Ala Ala Gln Ser Leu  
 405                    410                    415  
  
 Asn Gly Ala Leu Val Val Asn Pro Trp Asn Thr Glu Glu Leu Ser Glu  
 420                    425                    430  
  
 Ala Ile Tyr Glu Gly Leu Ile Met Ser Glu Glu Lys Arg Arg Gly Asn  
 435                    440                    445  
  
 Phe Gln Lys Met Phe Lys Tyr Ile Glu Lys Tyr Thr Ala Ser Tyr Trp  
 450                    455                    460  
  
 Gly Glu Asn Phe Val Lys Glu Leu Thr Arg Val  
 465                    470                    475  
  
 <210> 8  
 <211> 2695  
 <212> DNA  
 <213> Hansenula polymorpha  
  
 <400> 8  
 cttaaatacc acaataggaa aattatcaat aaagcttttc ggatttcatt acgttatatc      60

gcaaaaaaat agtcgagctt tctgaaccgt tcgttaataa aaaaatagtt ttttcagatt 120  
tctatgtgag gcagtcacga tagaattcca tcgaactcgt cagcgccaaa tgtgaatgcg 180  
gctttcaaaa gctttgtcga atttggatg ggaatccatg aatogaagat gtcaaaatgg 240  
gggatcacaa aagtacactc acgaggaaaa tcaaaacctt ctcgtacctt taacacatac 300  
ggaaatgatc gatcgattt agaagattcc tcaatgatt tcgtcatata tagtatctg 360  
aggtatttat ggaccgattc gtaataacat catatacatc gcgcgttgc cctgtccag 420  
agatttcgat gaaaaaagcg aattttattc taatatttga agcatgc当地 acatgggca 480  
gttgatttgt gtgagggtaa aatatcatga attgcaccca tcaaatgc当地 caagatattg 540  
accaatccta taatagaaaa cagacttacc acaaataatgat tgtgatgc当地 atattatgaa 600  
tctccagatg aaaggctcga aagctatgaa gcctcttcaa actttcatg gtgagataat 660  
attttcgaaa ttccacgaa cttctaaaac gcaattattt aatataaagg aaaaataata 720  
tttccatata gcaagcaaat caagctgc当地 tcctcatcct taaaactaat aaatcttacc 780  
catttgatac caatggtcaa aggtatgtt atagtggttt caaatagaat cccagtc当地 840  
attaagaaga ctgaagatga tgaaaatgga aatcaagat acgactatac aatgtcatca 900  
ggcggatttag tgacggcatt acaagggctc aaaaatccat ttgc当地tggtt tggatggc当地 960  
gggatgtctg ttgatagcga acaggacga caaactgtcg agcgggattt gaaggaaaag 1020  
ttcaattgtt atccgatatac gttaagtgc当地 gaaattgc当地 acttacatta taacggctt 1080  
agcaattcta tacttggcc attgtccac tatcacccag gggagatgaa ttttgc当地aa 1140  
attgcttggg ccgcttattt ggaagcaaat aaactgttt gccaaacgat ct当地aaaggag 1200  
ataaaagacg gggacgttat ctgggtacat gattatcatc tcatgttgc当地 gccttc当地 1260  
ctaagagacc aacttaatac taagggcta cc当地aatgtca aaattggctt ttcccttcat 1320  
actcccttcc ct当地aaagcga aatatacagg atacttc当地tgc当地 taaggaaaga aattctc当地aa 1380  
ggagtgc当地ta gttgtgattt gataggttc cacacctatg attatgtccg tcactttctt 1440  
agttc当地gttgc当地 aaagaatatt gaaattgc当地 acgagccc当地 aagggttgc当地 ct当地aatgtat 1500  
agacaggtga ct当地taagtgc当地 ttatccgatt ggc当地attgc当地 ttgaca当地attt cttgc当地atgtt 1560  
cttaagactg atgaggtcaa aagcaggata aaacagctgg aaaccagatt tggtaaagat 1620  
tgttaactta ttattgggtt ggacaggctg gattacatca aagggttgc当地 tcaaaaactc 1680  
cacgc当地tttgc当地 aaattttctt ggagagacac cctgagttgaa ttggaaaagt tggatgtt 1740  
caggtggctg tcccctc当地acg agggacgtt gaagaatatac aatcttgc当地 ggc当地agctgta 1800

aatgagctag tggaaagaat caatggtaga tttggtaccc tcgaatttgt tcctatccat 1860  
ttccttcata aaagcgtaaa cttccaagag ctgatatctg tctacgctgc tagtgatgtt 1920  
tgtgtagtgt catcgacacg ggacggaatg aatttggtca gttatgaata cattgcttgt 1980  
caacaagatc gaaaggagtc tctagacta agtgaatttg cgggagctgc tcagtcatta 2040  
aatggcgctc tcgttagtcaa tccatggaaat acagaagaac tcagtgaagc tatttacgaa 2100  
ggctttagtca tgagtgaaga gaaaaggagg ggcaattttc agaagatgtt caagtacatt 2160  
gagaaatata ctgcaagtta ttggggagag aactttgtga aagaattgac gagagtgtga 2220  
ttactgttgtt ttgcaggtaa atttggaaatg ttcacttgc cttgaagaat tttatattat 2280  
atacatgtta tacatcaata ggataaaaat taagtagaca aagttatcat tttgttggc 2340  
tgtaaaaattt gaacgataac aatataatttgc acaaaattaa tttgatctaa ttgagctgg 2400  
gggcgtataa tatttggttt cctgaatcat cttgttagatc acaatatgg gcagcttctt 2460  
tcgcagccga tcacagagaa acacatcaca cttgtccaaat atgatcacat atcgcatatca 2520  
atcggggaaa tgcaaggata caggttgacc atggaagacg cggtctgtga tttgaacgaa 2580  
agaatattcg tgacggaaga gggacttgac atcagaaaac aagacgagaa tacagagggt 2640  
gatctggagt ctcttcaaat taacatttat ggtgtcttg acggacatgg cggtt 2695

<210> 9  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR primer F1 (forward)

<220>  
<221> misc\_feature  
<222> (1)..(26)  
<223> n is a, c, t, or g; v is a, c, or g; y is c or t;

<400> 9  
tggccvytnt tccaytacca tccygg 26

<210> 10  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR primer R1 (backward)

<220>  
<221> misc\_feature

<222> (1)..(24)	
<223> r is a or g; b is c, g, or t; y is c or t, h is a, c, or t	
<400> 10	
ggcrtgbaay ttytghggha cacc	24
<210> 11	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing Primer F3 (forward)	
<400> 11	
ggaagcaaat aaactgtttt gcc	23
<210> 12	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer F4 (forward)	
<400> 12	
ctgttaagtgc ttatccgatt ggc	23
<210> 13	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer F6 (forward)	
<400> 13	
ggacgacaaa ctgtcgagcg gg	22
<210> 14	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer F7 (forward)	
<400> 14	
catactcctt ttccctcaag cg	22
<210> 15	
<211> 21	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer F8 (forward)	

<400> 15		
aaagcgtgaa ctccaagag c		21
<210> 16		
<211> 22		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Sequencing primer F9 (forward)		
<400> 16		
gcgtgtgatt actgtggttt gc		22
<210> 17		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Sequencing primer F10 (forward)		
<400> 17		
ggtgagataa tatttcgaa atttcc		26
<210> 18		
<211> 27		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Sequencing primer F11 (forward)		
<400> 18		
cccatcaaat gcagcaagat attgacc		27
<210> 19		
<211> 21		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Sequencing primer F3 (backward)		
<400> 19		
ccattcaaga atttgtcaac g		21
<210> 20		
<211> 23		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Sequencing primer R4 (backward)		
<400> 20		

catgagatga taatcatgtatccc	23
<210> 21	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing Primer R5 (backward)	
<400> 21	
caattttgac attcggttagc ccc	23
<210> 22	
<211> 22	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer R6 (backward)	
<400> 22	
gtaatgccgt cactaatccg cc	22
<210> 23	
<211> 23	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer R7 (backward)	
<400> 23	
gaacatcttc tgaaaattgc ccc	23
<210> 24	
<211> 21	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer R8 (backward)	
<400> 24	
ctagctcatt tacagctgcc c	21
<210> 25	
<211> 25	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> Sequencing primer R9 (backward)	
<400> 25	
catagcttgc gagccttca tctgg	25

<210> 26		
<211> 24		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Sequencing primer Plasm. F (forward)		
<400> 26		
ggcgagcccg atcttccccca tcgg		24
<210> 27		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Sequencing primer Plasm. R (backward)		
<400> 27		
ctgctcgctt cgctacttgg agccac		26
<210> 28		
<211> 15		
<212> DNA		
<213> <i>Saccharomyces cerevisiae</i>		
<220>		
<221> misc_feature		
<223> Heat shock element		
<400> 28		
ggaacagaac aatcg		15
<210> 29		
<211> 249		
<212> DNA		
<213> <i>S. cerevisiae</i>		
<220>		
<221> misc_feature		
<223> TPS1		
<400> 29		
agcgatgaaa tcgcagactt actctacaac tggttcagta attctattct atggccgtta		60
ttccattacc atcctggtga gatcaatttc gacgagaatg cgtggtcggc atacaacgag		120
gcaaaccaga cgttcaccaa cgagattgcg ttggtgtcga caggctggat tacatcaaag		180
.gtgtgcctca gaagttgcac gccatggaag tgtttctgaa cgagcatcca gaatggaggg		240
gcaagggttg		249
<210> 30		
<211> 249		

<212> DNA  
 <213> K. lactis  
 <220>  
 <221> misc\_feature  
 <223> TPS1

<400> 30  
 agtgcacgaag ttgctgatct tcattacaac ggattttcca actctattct atggccattg 60  
 ttccattacc atcctggtga gatcacttgc gatgacactg catgggtggc gtacaacgag 120  
 gcaaataatgg ctttgccga tgaaattgaa ttggggtcga tcgtcttgat tacatcaaag 180  
 gtgttcctca gaagttacac gccttggaaag tggccctcggtgcgcacatcctt gaatggattg 240  
 gtaagggtgg 249

<210> 31  
 <211> 249  
 <212> DNA  
 <213> C. albicans  
 <220>  
 <221> misc\_feature  
 <223> TPS1

<400> 31  
 agtgatacga ttgctgattt acattataat gggtttcaa atagtatttt atggccactt 60  
 ttccattatc atcctgggaa aatgaacttt gatgaaaatg catggcagc atatattgaa 120  
 gccaataaga aatttgcatt gaaaaatgtg ttgggtgtga tagatttagac tatataaag 180  
 gtgttccgca aaaattacat gcatttgaag tcttttggaa tgaaaatccc gaatggattg 240  
 gcaaaggtag 249

<210> 32  
 <211> 249  
 <212> DNA  
 <213> S. pombe  
 <220>  
 <221> misc\_feature  
 <223> TPS1

<400> 32  
 gatgtgaga ctgccgaccg ccattacaac ggattttagta acagcattct ttggcccttg 60  
 ttccactacc atcctggtga aattaatttt gacgaggaaa attggggaggc ctatcgtgcg 120  
 gctaactacg ctggccga ggccattgtg tgggtgtcga tcgtttggac tacattaagg 180  
 gtgttccccca aaaattccat gcatttgaag tggccctttaga acaataccctt gaatgggttg 240  
 gaaagggtcg 249

<210> 33  
<211> 250  
<212> DNA  
<213> A. niger  
<220>  
<221> misc\_feature  
<223> TPS1

<400> 33  
ctgaaggcgc ttgcttgctg acggatatcc actgctcaca gactccattc tctggccctt 60  
cttccattac catcccgtg agattacctt tgacgagtcc gcctgggaag catacaagga 120  
ggccaaccgt ctttcgcca aagcggttgc gtgggtgtgg accgcctgga ttacatcaa 180  
ggtgtccccc agaagttaca tgccctttagt gtgttcctta gcgatcatcc ggagtgggtt 240  
ggcaaggttg 250